

## **REMARKS**

### **STATUS OF CLAIMS**

Claims 1 – 18, 67, and 71 – 85 are currently pending. Claims 19 – 66 and 68 – 70 have been canceled, without prejudice, applicant hereby reserving the right to pursue claims of the same or similar scope in a continuation or divisional application. Claims 1, 16 – 18 and 67 have been amended. New claims 71 – 85 have been added. No new matter has been added

Support for the amendment to claim 1 is found in the present specification at page 10, line 25 – page 11, line 9, and page 13, line 19 – 24.

Support for the amendment to claim 15 is found in the present specification at page 11, lines 18 – 21.

Support for the amendment to claim 15 is found in the present specification at page 11, lines 18 – 21.

Support for the amendment to claim 17 is found in the present specification at page 12, lines 7 – 13, and page 15, line 7 – 18.

Support for the amendment to claim 67 is found in the original claims and in the present specification at page 10, line 25 – page 11, line 9, and page 13, line 19 – 24.

Support for new claims 71 and 72 is found throughout the specification.

Support for new claims 73 - 79 is found throughout the present specification and in particular at page 15, line 29 – page 16, line 7.

Support for new claims 80 – 81 is found in the present specification at page 11, line 22 – page 12, line 4.

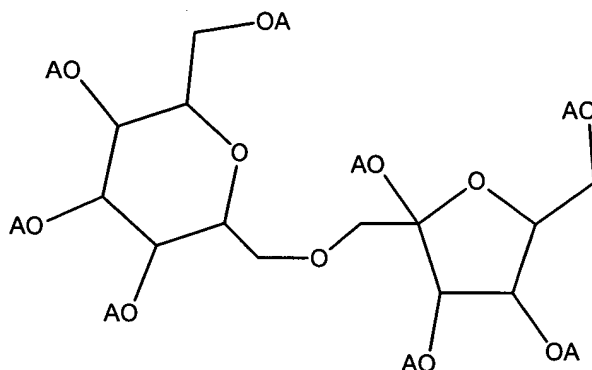
Support for new claims 82 – 85 is found in the present specification at page 19, line 24 – page 21, line 18.

### **REJECTION UNDER 35 U.S.C. 102(b)**

The Examiner has rejected claims 1 – 18 and 67 as being anticipated by U.S. Pat. No. 3,635,856 (Kaneko). Specifically, the Examiner has cited Kaneko

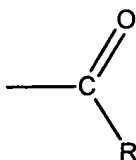
as disclosing a process for extruding a resin-containing composition comprising:  
a) providing a mass comprising at least one extrudable resin and saccharide ester; and b) extruding said extrudable mass to produce an extrudate.

This rejection is respectfully traversed in view of the above-mentioned amendments. The claims now pending are directed to a process for extruding a resin-containing composition comprising providing a mass comprising at least one extrudable resin and a saccharide ester as indicated in Formula I:



wherein each "A" is independently hydrogen or has the structure of Structure I:

Structure I



Importantly, it is now required by the pending claims that the saccharide ester have all of the "A" moieties of at least about 50 wt. % of the compounds of Formula I comprise moieties of Structure I. In other words, the claims now require that the at least 50 wt% of the Formula I compounds are octa-ester substituted. This is important for at least two reasons. First, such a limitation is not disclosed in the Kaneko patent. Second, applicants have discovered, as described extensively in the present specification, that the degree of ester substitution can have an important impact on the properties of the composition and processes which use such a composition. In fact, as demonstrated below with reference to the attached declaration of one of the co-inventors, Fred

Durrenberger<sup>1</sup>, the use of such a high percentage of octa-substituted saccharide esters produces results which are dramatically and unexpectedly superior to the results achieved with a saccharide esters which have less than such a concentration and are more analogous to those described in the Kaneko patent.

More particularly, the attached declaration establishes that the Kaneko patent teaches the use of mon- and di-substituted saccharide esters. (see Durrenberger Declaration, paragraph 4). This conclusion is based in part on the fact that this patent actually teaches away from the present invention. The Kaneko patent in that it states that "esters resulting from the complete esterification of organic acid have proven to be ineffective to prevent the shaped body to color in the early stages after molding." (col. 3. line 73 – col. 4, line 1). As a result, a person skilled in the art at the time the present invention was made would believe that highly substituted esters would not have a heat stabilizing effect on PVC compositions. *Id.* The Kaneko patent, taken as a whole, therefore teaches away from highly substituted esters, included particularly octa-substituted sucrose esters, and instead teaches that mono- and di- substituted sucrose esters should be used.

Applicants have unexpectedly found that desirable properties and other unexpected advantages can be achieved by use of saccharide esters in accordance with the claims as now presented. This finding is demonstrated by experimental data reported in the Durrenberger Declaration. Durrenberger tested and/or supervised the testing of three different compositions. The first composition (Sample 1A) was made in accordance with the methods as now claimed in the present application, while the other two compositions (Samples 1B and 1C) are outside the scope of the claims as now amended in that they include less than 50 % by weight of octa-substituted saccharide esters.<sup>2</sup> The results of

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<sup>1</sup> The undersigned notes that an unsigned declaration is attached. The signed copy will be filed shortly.

<sup>2</sup> While samples 1B and 1C are deemed to be fairly representative of the compositions in Kaneko, the tested compositions may be closer to the scope of the present invention than the closest prior art.

these tests are reported in Table 1 on the following page.

Table 1

Parameter	Test Sample A	Test Sample B	Test Sample C
Degree of Substitution	At least 70 wt.% Octa	Estimated 40% mono- and 58% tri-(based on Chart attached as Exhibit 1)	Estimated 73% mono- and 27% tri-(based on Chart attached as Exhibit 1)
Equilibrium Temp (oC)	212	215	216
Fusion Torque (mg)	3,370	3,900	4,050
Equilibrium Torque (mg)	1,860	1930	1930
Fusion Time (min)	0.78	0.45	0.43
Dynamic Stability time, min.*	14	10	11

\*elapsed time between fusion and measurable onset of cross-linking

This test work illustrates applicants' discovery that the degree of substitution of the saccharide ester in accordance with the present invention has a significant beneficial effect on the fusion characteristics of the shapeable composition and therefore on the present extrusion methods. More particularly, the equilibrium temperature, the fusion and equilibrium torque, fusion time and dynamic stability were all measured, and it was shown that the higher level of substitution exhibits superior performance relative to compositions based on lower levels of substitution. This table evidences that compositions comprising

saccharide esters having a higher degree of substitution, particularly predominantly octa stearate as in the case of Test Sample A, exhibit properties more characteristic of compositions having a higher degree of external lubrication than the lower substituted saccharide esters, as evidenced by the increased fusion time and reduced fusion torque. Furthermore, at the equilibrium condition, the melt temperature of the compositions having a major proportion of octa-substituted saccharide ester is considerably less than that of the compositions based on lower substituted compounds, and the equilibrium torque is equal to or lower than that of the compositions comprising mainly lower substituted compounds. Finally the dynamic heat stability is generally beneficially impacted by the use of compositions based on a high degree of substitution. The Kaneko patent does not in any way suggest any of these results.

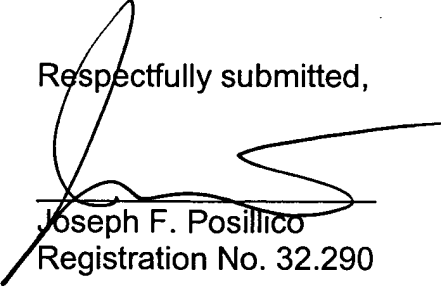
### **CONCLUSION**

In view of the amendment to claim 1 and the foregoing remarks, applicants assert that the present claims are in condition for allowance and request that the Office issue a Notice of Allowance at the earliest possible date.

The Office is invited to contact Applicants' undersigned counsel by telephone in order to further the prosecution of this case in any way.

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Respectfully submitted,



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